

A NEW CLASSIFICATION OF AUSTRALIAN ROBBERFLIES BELONGING TO
THE SUBFAMILY DASYPOGONINAE (DIPTERA, ASILIDAE).

By G. H. HARDY,
Walter and Eliza Hall Fellow in Economic Biology,
Queensland University, Brisbane.

(Four Text-figures.)

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In these PROCEEDINGS for the year 1921, I drew attention to the fact that published characters were inadequate for the purpose of placing most of the Australian Dasyopogoninae in their correct genera and an outline of some of the characters that could be used for the purpose was given. The various errors that were made in that attempt to reclassify the Dasyopogoninae are amended here, where it will be noted that various species are transferred from one genus to another whilst other modifications are suggested.

Considerable delay and many difficulties have been experienced in the progress of this work, for it is not always easy to recognize Australian robberflies from the descriptions so far published. Confusion has been caused by certain specimens that are reputed to be authentically named, but probably had never been examined by the authorities under whose names they are standing. At most these had been compared with authentic specimens or were those retained out of a small series, some of which had been subsequently submitted for identification, the name thus secured, but the specimens themselves were never recovered. Under the latter circumstances names received have been attached to allied species or to others that have a superficial resemblance to those submitted for identification. A supposed specimen of *Neosaropogon nigrinus* Ricardo, in the collection of Mr. F. H. Taylor, agrees with the genus as defined by Miss Ricardo, but apparently it is an undescribed species belonging to or near *Rachiopogon*, whilst the Australian Museum possesses a further specimen bearing the same name, originally also from Mr. Taylor's collection, and this is the female of *Ommatius angustiventris*, one of the subfamily Asilinae.

Although correctly identified in collections, other specimens are a source of error as they do not correspond to the published characters and hence may be ignored as unreliable with regard to their identity. *Neosaropogon princeps* is such an example; the genus as defined by Miss Ricardo and compared with the specimen misidentified as *N. nigrinus* in Mr. Taylor's collection, did not agree with characters of the typical species and I have therefore only recently accepted the identification.

The present classification has been advanced by including the outstanding characteristics of the female genital armature. The presence of spines has long been recognized in some of the genera. Miss Ricardo mentions them in the descriptions of certain species and in his "Diptera Danica" Lundbeck referred to them under genera containing them, but Dakin and Fordham overlooked these

and other references when they applied the character as of generic value on Australian material. In the present paper the presence of these spines is regarded as a tribal character.

All the Australian Apioceridae, Mydidae and part of the Therevidae and Asilidae are furnished with these spines in the female genital armature. These spines are characteristic of nearly all the ground-frequenting flies of these four families and they occur occasionally in genera, like *Laphria*, the species of which are not so addicted to low flight.

Although this paper deals mainly with genera, certain notes pertaining to species are included. Besides recording the position of certain species, as far as has yet been ascertained, that have been hitherto misplaced generically, some male genitalia are described.

It is proposed to revise each genus, treating more fully with specific characters at some future time, but the identities of so many species are yet in doubt and so many names are outstanding, that several years must pass before even a reliable and comprehensive catalogue of the Australian Robberflies can be compiled.

I am indebted to Dr. I. M. Mackerras for drawing attention to the occurrence of thoracic spines in the genus *Codula*, the presence of which seems to have been overlooked by previous authors; to Dr. E. W. Ferguson for information acquired by him; and to Dr. C. Anderson, Mr. H. A. Longman and Mr. E. R. Waite, Directors, and to Mr. J. A. Kershaw and Mr. J. Shewan, Curators, respectively of the Australian, Queensland, South Australian, National and Macleay Museums, for access to the material under their charge, much of which has been on loan over long periods.

Subfamily DASYPOGONINAE.

The characters whereby this subfamily is to be recognized consist of the open marginal cell (at most this is closed at the wing margin, never before it) and of the broad wing, the anal area always being present, never absent as in the subfamily Leptogastrinae. It has long been recognized that these characters do not indicate a true affinity between any two genera containing them and certain genera may be more closely allied to others excluded from the subfamily. Amongst the Australian material there are three very well defined groups of the Dasyopogoninae as here understood, each of which is given a tribal name, namely *Brachyrrhopalini*, *Saropogonini* and *Phellini*; the last of these has affinities with the subfamily Laphrinae. Several genera, mainly *Clinopogon* and *Deromyia*, may ultimately be withdrawn from their respective tribes and associated with other genera not here dealt with if the main scheme be developed so as to include the genera of the world.

Some authors would treat the Leptogasterinae as part of the Dasyopogoninae and under these circumstances it would rank as a fourth tribe *Leptogasterini*, associated with the *Brachyrrhopalini*, whilst Laphrinae might be reduced to tribal value including only the genus *Laphria* in Australia; the other genera of this region would form yet another tribe, as they are without the spines in the female genital armature.

As far as I have yet been able to trace the characters, the subfamily Asilinae forms a group apart; none of the genera are allied to other groups and in rare cases when the female is provided with genital spines, these differ from those of the *Brachyrrhopalini* and *Phellini* in position and in structure.

The characters of the tribes here dealt with and the association of the genera contained within them, are given in the key below. Several genera are grouped

under various couplets, and, although our present knowledge indicates ways whereby some of these may be isolated, this procedure is not followed in the present instance as future study will probably show more decisive characters that may be used for the purpose. This especially applies to the *Saropogonini* where the details of the antennae, the chaetotaxy and perhaps the male genitalia will help.

Key to the tribes and genera of the Dasypogoninae.

1. Female genital armature furnished with a paired row of spines 5
 Female without these spines BRACHYRRHOPALINI. 2
2. Thorax with a pair of lateral spines, one placed on each side a little above the wings 3
 Thorax without such spines; antennae with three segments and a minute spine; anterior tibiae with a spur *Brachyrrhopala* Macq.
3. Anterior tibiae with an apical spur 4
 Anterior tibiae without this spur; antennae with three segments and a minute spine *Codula* Macq.
4. Antennae with four segments and a minute spine *Chrysopogon* Roder.
 Antennae with three segments and a strongly developed spine .. *Opseostlengis* White.
5. Wings with the fourth posterior cell open, at most closed at the wing margin. SAROPOGONINI. 6
 Wings with the fourth posterior cell closed considerably before the wing margin. PHELLINI. 8
6. Antennae with the fourth segment present and in addition with a small apical segment or a minute spine 7
 Antennae with three segments and a minute spine; with spur on the anterior tibiae *Neocyrtopogon* Ric., *Rachiopogon* Ric., *Gen. ?* (part of the old *Neosaropogon*).
7. With spur on the anterior tibiae *Erythropogon* White, *Questopogon* Dakin and Fordham, *Neosaropogon* Ricardo, *Saropogon* Loew.
 Without spur on the anterior tibiae *Neodioctria* Ricardo, *Stenopogon* Loew, *Cryptopogon* White, *Clinopogon* Bezzi.
8. Antennae with three segments and a minute spine; with spur on anterior tibiae. *Deromyia* Phillippi.
 Antennae with four segments and a minute spine or a style; without spur on anterior tibiae *Phellus* Walker, *Psilozona* Ricardo, *Bathypogon* Loew.

Tribe *Brachyrrhopalini* (new tribal name).

To this tribe belong all the Australian genera in which the female genital armature is without a row of spines; the antennae bear at the apex a spine that is minute in all except one genus; the fourth posterior cell is always open and the abdomen, though not necessarily club-shaped, is narrower at the base than at some more remote point. The genera placed here constitute a homogeneous group.

Genus BRACHYRRHOPALA Macquart.

Macquart, *Dipt. Exot.*, suppl. 2, 1847, 36.—*Cabasa* Walker, *Ins. Saund.*, Dipt. ii, 1850, 100.

Synonymy.—I can see no justification for maintaining *Cabasa* as a distinct genus; all the characters of the only species hitherto placed therein are identical with those of *Brachyrrhopala*.

Note.—The species belonging to this genus are *Dasypogon* (*Cabasa*) *pulchella* Macquart, *Brachyrrhopala ruficornis* Macquart, *Codula fenestrata* Macquart and others yet unidentified. *Brachyrrhopala maculata* Roder and *B. fulva* Ricardo (= ? *Codula quadricincta* Bigot) undoubtedly belong here. *Dasypogon maculinevris* Macquart and *D. limbipennis* Macquart, both of which have been placed by some authors in this genus, are now referred to *Erythropogon*. *Brachyrrhopala bella* White is a *Saropogon* and *Dasypogon* (*Brachyrrhopala*) *nitidus* Macquart belongs to *Neosaropogon*.

Tribe **Saropogonini** (new tribal name).

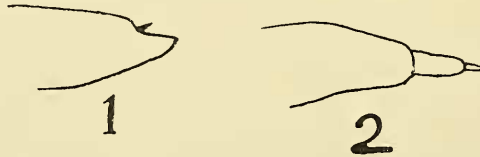
The eight genera placed in this tribe can be readily divided into three groups, all of which have the female provided with about twelve easily detected spines arranged in two rows symmetrically placed at the apex of the abdomen. The antennae are provided with a minute spine similar to those found in the previous tribe, the only exception being on *Clinopogon* Bezzi (Text-fig. 1). The tribe needs further study for the purpose of determining which characters can be used best for separating such genera as are here grouped. No attempt has yet been made to use the few bristles of the thorax for the purpose although these promise to be of assistance. In the meanwhile the antennal structure of *Clinopogon*, the extra cross-vein in the wing of *Cryptopogon* and the specialized male genitalia of *Stenopogon* are the only definite characters whereby these genera may be isolated.

Genus **RACHIOPOGON** Ricardo.

When my previous paper was written the characters of this genus were unknown to me. I have since found that they are the same as those given then for the genus *Neosaropogon*. Only one species has been placed hitherto in this genus and to it I am adding for convenience some forms that may ultimately be placed in a new genus. *Dasyopogon carbo* Walker, the type of which, according to Miss Ricardo, is probably lost, is an easily recognized black species with the fourth and fifth segments of the abdomen red. It is placed here with the specimen from Mr. F. H. Taylor's collection erroneously named *Neosaropogon nigrinus*; several others of uncertain identity also belong here.

Genus **ERYTHROPOGON** White.

The fourth segment of the antennae is present, though often difficult to detect, in the typical species of this genus. *Dasyopogon (Brachyrrhopala) limbipennis* Macquart belongs here, despite the fact that the antennae are abbreviated. Both species of this genus range from Tasmania to Queensland.



Text-fig. 1. Apex of the antennae in genus *Brachyrrhopala*.
Text-fig. 2. The same in *Clinopogon sauteri* Bezzi.

Genus **QUESTOPOGON** Dakin and Fordham.

In the South Australian Museum there are two specimens that I believe belong to this genus. The general shape is that of *Rachiopogon carbo* Walker. The difference given between this genus and *Neosaropogon* by Dakin and Fordham will, of course, not hold, as those authors copied the erroneous characters of the latter as given by Miss Ricardo. The specimens placed here are from Ooldea (A. M. Lea) and Murray River (H. S. Cope), South Australia, and they compare very favourably with the description of the typical form.

Genus **NEOSAROPOGON** Ricardo.

I have misunderstood this genus for many years. The generic characters given by Miss Ricardo did not agree with specimens identified as *N. princeps* in

collections. A supposed authentic specimen of *N. nigrinus* Ricardo, in Mr. Taylor's collection, did so conform, thus misleading me. In the National Museum there is an authentic specimen of *Dasygogon carus* Walker, which name is a synonym of *N. princeps* Macquart and which is identical with specimens identified as the typical form in most other collections.

N. princeps Macquart is the only species of those originally placed here that can be allowed to remain in the genus. *Dasygogon (Brachyrrhopala) nitidus* Macquart also belongs here, *Dasygogon sergius* and *D. festinans* Walker apparently being synonyms of this species.

Dasygogon salinator Walker, *N. froggatti* Dakin and Fordham (the latter I have recognized in the South Australian Museum collection) and also, perhaps *N. claripennis* and *N. nigrinus* Ricardo, must be removed to another position which is indicated in the key, near *Rachipogon*.

Genus SAROPOGON Loew.

Saropogon rubescens White, *Brachyrrhopala bella* White, and probably *Dasygogon suavis* Walker, belong here.

Genus STENOPOGON Loew.

The globular appearance of the male genitalia in this genus is due to the presence of a large dorsal plate overhanging the upper forceps. This is characteristic of the genus as far as the Australian material is concerned, but is replaced by a somewhat similar ventral plate on my specimen of the typical species, *N. sabaudus* Fab., supplied by Prof. M. Bezzi. Provided the genitalia on the latter have not been reversed, the Australian species will have to be removed from this genus.

S. elongatus Macquart appears to be the species on which this dorsal plate is produced into a downwardly projecting curved apical process that becomes bilobed at the apex (Text-fig. 3). Another species has this plate simple. The specimen identified by White as *S. nicoteles* Walker, conforms nearest to that illustrated but may not be identical, as the apex is hidden between the forceps.

Genus CLINOPOGON Bezzi. (Text-fig. 2).

The type of this species, *C. sauteri* Bezzi, is from New Guinea and I am indebted to Prof. Bezzi for a pair. The antennae, here illustrated, do not conform to the usual type of the Saropogonini in so far as the apical segment is not reduced to a spine. Two Australian species, both apparently undescribed, are known to me.

Tribe Phellini (new tribal name).

The genital spines of the female are not always easily detected on dried specimens. Their number is in excess of those found on specimens of the tribe *Saropogonini* and they are shorter. The closed fourth posterior cell, however, will always indicate this tribe when characters of the genital armature are doubtful. The genus *Deromyia* will not be maintained in this tribe when the relationship to the other genera of the world has been ascertained. The other three genera are certainly closely allied.

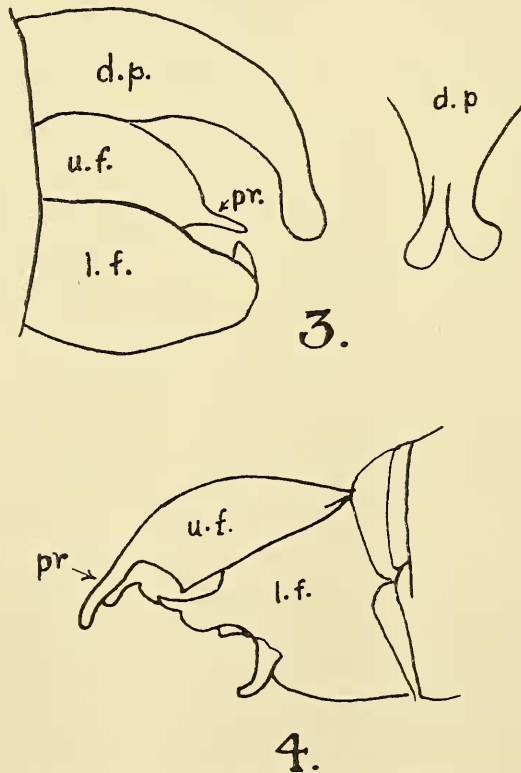
Genus PHELLUS Walker.

In my previous paper two forms of this genus were referred to and the supposed sexes allied. Since then these sexes are found to be distinct species so

that four forms are represented in all. One has been named *P. piliferus* Dakin and Fordham; the typical form, *P. glaucus* Walker, has what its author calls "tips of the middle shanks hooked" and which Miss Ricardo referred to as "curious prolongation of the middle tibia"; probably *P. piliferus* also has this character, which has been regarded as of generic importance and is not mentioned in the specific description. The other two forms are respectively similar to those described, but the tibial character is missing in each case; it is possible this may be no more than a variation.

Genus PSILOZONA Ricardo.

This genus is represented in the South Australian Museum by a series of nine specimens from Fortescue River, Hammersley Range, North-west Australia (W. D. Dodd). These specimens agree in all details with *P. albitarsis* and *P. nigratarsis* Ricardo, and can be divided on the same characters, but probably they do not represent more than one species. I know of no characters that would adequately separate this genus from *Phellus*, but the two cannot be confused owing to the great disparity in size.



Text-fig. 3. The male genitalia of *Stenopogon elongatus* Macquart, together with a view of the dorsal plate, seen from the rear but slightly askew.

Text-fig. 4. The male genitalia of *Bathypogon brachypterus* Macquart. *d.p.*, dorsal plate; *l.f.*, lower forceps; *u.f.*, upper forceps; *pr.*, process at the apex of the upper forceps.

Genus BATHYPOGON Loew.

Species of this well known Australian genus are met with in quantities settled on or flying over bare sandy patches of ground in the bush, on tracks and on roadways. The relative shortness of the wing is a unique character as far as Australia is concerned, thus making them recognizable at a glance, and the apex of the fourth antennal segment containing a small style, as in *Clinopogon*, also differentiates the genus from *Phellus* and *Psilozona*. Another genus, one of the Saropogonini yet to be named, has similar habits and general appearance but the wings are of normal length; it is readily mistaken for *Bathypogon* in the field.

The generic name was proposed by Loew for a species he described as *B. asiliformis*, but the work in which the descriptions appear does not seem to be in any Australian library and in consequence I have not been able to consult the original references. Of the twelve species that have been referred to this genus and that are contained in the following list, *asiliformis* and *plumbeus* must be omitted from the present discussion, as I have insufficient information concerning them.

- Dasygogon brachypterus* Macquart, 1838.
Dasygogon pedanus Walker, 1849.
Dasygogon aoris Walker, 1849.
Dasygogon boebius Walker, 1849.
Bathypogon asiliformis Loew, 1851.
Dasygogon testaceovittatus Macquart, 1854.
Proctocanthus posticus Walker, 1855.
Asilus mutilatus Walker, 1855.
Bathypogon maculipes Bigot, 1878.
Bathypogon nigrinus Ricardo, 1912.
Bathypogon tristis White, 1913.
Dasygogon plumbeus Fabr., placed here on the suggestion of Loew.

D. brachypterus and *B. nigrinus* are the only species described as having black hairs in the moustache, all the others having white or yellow hairs. Of these two the former has a few black hairs above the otherwise light moustache, the latter has black hairs and white ones. On this character alone *B. nigrinus* can be readily recognized, the black bristles occupying the central portion of the tubercle, white ones surrounding them.

Subsequent descriptions of *B. brachypterus* refer to the black bristles being absent, and what is believed to be this form, or at least *P. posticus* Walker, which is placed as a synonym by Miss Ricardo, is here illustrated (Text-fig. 4). Macquart's second reference under this name, a small male only 10 mm. long from Tasmania, I have no hesitation in referring to a distinct species that I have not seen from the mainland.

B. maculipes Bigot is evidently a distinctive species, one of very large size (22 mm.), but it is possible that more than one form has been referred to under the name.

Walker's three species, *mutilatus*, *boebius* and *pedanus* are described in such a way as to appear but one form, as also *aoris* when amended by Miss Ricardo's remarks concerning the type.

Another form that stands distinct according to the original description is *testaceovittatus*.

White referred to two Tasmanian species only, one being described as having a yellow moustache, or with black hairs above (*brachypterus*) and is more robust than the other which is further distinguished by a white moustache with a few

black bristles above (*nigrinus*). *B. nigrinus* certainly does occur in Tasmania, but I do not know if this is the form White had before him. *B. brachypterus* I have not seen from there.

The male genitalia of six species belonging to this genus are readily recognizable. *B. brachypterus* Macquart has an apical process on the upper forceps. That known as *B. nigrinus* Ricardo has simple upper forceps whilst a third form identified by White as *B. aoris* Walker, has a ventral lobe on these forceps. *B. tristis* White and another from the Eastern side of Australia have a type of genitalia similar to, but shorter than that of *B. nigrinus*, whilst a new species from Tasmania has a small projection emerging at the apex between the forceps.

It is difficult to make further progress with regard to the specific identity of the species in this genus in Australia. *B. tristis* White is the only type available, this being in my own collection, and it is very evident that there has been considerable confusion caused by the inadequate treatment given in the various descriptions. There are evidently many species to be found in Australia, all of them having the same superficial appearance, but very readily distinguished from each other on genital characters of the male and to a certain extent on colour characters. They are not well represented in collections numerically although they are amongst the more abundant robberflies to be found in the field. The distribution of the genus is interesting zoogeographically, apparently being limited to Australia and South America. Four species from Chili have been placed here.
